CLAIMS

1. A method for use in a wireless receiver, comprising:

receiving a signal (111) representing *S* symbols over a number of time slots, where the *S* symbols are associated with a synchronization word taken from a set of *M* synchronization words, where S > *1* and *M* > *1*; and

acquiring frame synchronization with respect to the number of time slots by estimating the associated synchronization word as a function of metric values associated with each of the *M* synchronization words (310).

2. The method of claim 1, wherein the acquiring frame synchronization step includes:

storing *K* correlator values for each time slot, each correlator value representing a correlation of the received signal in one of the *S* time slots with each one of *K* possibly received symbols, where *K* > *1*;

determining a set of metrics for each of the *M* synchronization words from the stored correlator values;

selecting a highest metric value from all of the determined sets of metrics; and

determining from the selected highest metric value (a) one of the *M* synchronization words as the estimate of the received synchronization word and (b) a time slot offset for acquiring frame synchronization with respect to the number of time slots.

3. The method of claim 2, wherein each of the *M* synchronization words includes a unique sequence of symbols, and wherein for each of the *M* synchronization words the determining a set of metrics step includes the steps of:

performing *S* cyclic shifts of the synchronization word; and

for each cyclic shift, adding together respective correlator values associated with that pattern of symbols in each of the *S* time slots.

4. The method of claim 1, wherein each symbol is a secondary synchronization channel (SSCH) symbol of a universal mobile telephone system (UMTS), and the *M* synchronization words are 64 scrambling code group sequences.

5. The method of claim 4, wherein the acquiring frame synchronization step includes:

forming a matrix of correlation peak values from the received synchronization word, each row of the matrix being associated with one of a plurality of possibly received SSCH symbols, and each column of the matrix being associated with one of the number of time slots wherein each correlator peak value represents a correlation between a respective one of the S received symbols in the corresponding time slot with a respective one of the plurality of possibly received SSCH symbols;

forming a metric value for each cyclic shift of each one of the 64 scrambling code groups from the matrix of correlation peak values;

identifying the highest metric value; and

determining from the identified highest metric value (a) one of the 64 scrambling code group sequences as the estimate of the received synchronization word and (b) the associated cyclic shift for use in acquiring frame synchronization with respect to the number of time slots.

6. The method of claim 5, wherein the forming a metric value step includes the steps of:

forming a metric matrix, each row of the metric matrix being associated with one of the 64 scrambling code groups and each column of the metric matrix being associated with a cyclic shift; and

determining each metric value by adding corresponding correlator peak values associated with a particular cyclic shift of a particular scrambling code group:

7. A method for use in a universal mobile telephone system (UMTS) receiver, comprising:

receiving a signal representing a secondary synchronization channel (SSCH) transmitted from a UMTS transmitter, the SSCH conveying a sequence of S SSCH symbols over S time slots, the sequence associated with a scrambling code group associated with the UMTS transmitter, wherein the scrambling code group is taken from a set of 64 scrambling code groups;

storing data representative of probabilities that each one of K SSCH symbols were received in each one of the S time slots, where $K > 1$;

determining metric values from the stored data, each metric value representing a probability that a particular cyclic shift of a particular one of the 64 scrambling code groups was received;

identifying the highest metric value; and

determining from the highest metric value (a) the associated scrambling code group as the scrambling code group of the UMTS transmitter and (b) a time slot offset from the associated cyclic shift for use in acquiring frame synchronization with respect to the *S* time slots.

8. The method of claim 7, wherein the storing data step includes:

correlating each one of the *K* SSCH symbols with the received signal in each of the S time slots to provide *K* corresponding correlator values; and

storing the *K* corresponding correlator values associated with each of the *S* time slots.

9. Universal Mobile Telephone System (UMTS) equipment comprising:

a front end (105) for receiving a wireless signal representing a secondary synchronization channel (SSCH) transmitted from a UMTS transmitter and for providing a stream of samples therefrom, the SSCH conveying a sequence of *S* SSCH symbols over *S* time slots, the sequence associated with a scrambling code group associated with the UMTS transmitter, wherein the scrambling code group is taken from a set of 64 scrambling code groups;

a memory (230) for storing data representative of probabilities that each one of *K* SSCH symbols were received in each one of the *S* time slots, where $K > 1$; and

a processor (135) for (a) determining metric values from the stored data, each metric value representing a probability that a particular cyclic shift of a particular one of the 64 scrambling code groups was received; (b) identifying the highest metric value; and (c) determining from the highest metric value (1) the associated scrambling code group as the scrambling code group of the UMTS transmitter and (2) a time slot offset from the associated cyclic shift for use in acquiring frame synchronization with respect to the *S* time slots.

10. The UMTS equipment of claim 9, wherein the data representative of probabilities are correlator values and further comprising a bank of correlators for (a) correlating each one of the *K* SSCH symbols with the samples associated with each of the *S* time slots to provide *K*

corresponding correlator values; and (b) storing the K corresponding correlator values associated with each of the S time slots in the memory.

11. The UMTS equipment of claim 10, wherein the processor determines the metric value of each particular cyclic shift of a scrambling code group by adding together respective correlator values associated with that pattern of symbols in each of the S time slots.

12. Apparatus for use in a wireless receiver, the apparatus comprising:

a front end (105) for receiving a wireless signal representing a sequence of frames, and for providing a stream of samples therefrom, each frame conveying a sequence of symbols over a number of time slots, the sequence a priori being associated with a source of the wireless signal;

a memory (140) for storing a table of metric values, each row of the table being associated with one of M sequences of synchronization symbols, $M > 1$, and each column of the table being associated with a cyclic shift of the M sequences; and

a processor (135) for (a) identifying the highest metric value stored in the table of metric values, (b) determining from the identified highest metric value (1) one of the M sequences of synchronization symbols as an estimate of the received sequence of symbols and (2) the associated cyclic shift for use in acquiring frame synchronization with respect to the received wireless signal.

13. The apparatus of claim 12, further comprising a memory (230) for storing a table of correlation values, each row of the table being associated with one of a plurality of possibly received symbols, and each column of the table being associated with one of the number of time slots wherein each correlation value represents a correlation between the samples in the corresponding time slot with a respective one of the plurality of possibly received symbols and wherein the table of metric values is derived from the table of correlation values.

14. The apparatus of claim 13, wherein the processor determines the stored metric value of each particular cyclic shift of each of the M sequences by adding together respective correlation values associated with that pattern of symbols in each of the S time slots.